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Contribution of plant-derived phenolic compounds to combat *Candida* species biofilms

Natália Pereira Martins[1,2], Lillian Barros[2], Sofia Costa-Oliveira[3], Sónia Silva[1], Isabel C. F. R. Ferreira[2], Mariana Henriques[1]

[1]CEB, Centre of Biological Engineering, LIBRO–Laboratório de Investigação em Biofilmes Rosário Oliveira, University of Minho, Braga, Portugal; [2]Mountain Research Centre (CIMO), ESA, Polytechnic Institute of Bragança, Portugal.; [3]Department of Microbiology, Faculty of Medicine, Porto University, Alameda Professor Hernâni Monteiro, 4200-319 Porto, Portugal; natalia.martins@ceb.uminho.pt

Opportunistic fungal infections, namely involving *Candida* species, constitute a hot topic for scientific researchers. The present work aims to access antifungal potential of plant-derived phenolic extracts against planktonic cells and biofilms of *Candida* species. *Eucalyptus globulus* Labill. (blue gum), *Glycyrrhiza glabra* L. (licorice), *Juglans regia* L. (walnut) and *Salvia officinalis* L. (sage) evidenced to be the most effective *Candida* growth inhibitors, using disc diffusion assay. Minimal inhibitory (MIC) and minimal fungicidal (MFC) concentrations, and chemical composition of extracts by using HPLC-DAD-ESI/MS were also determined. Blue gum and walnut mainly exerted fungistatic potential, while sage exerted an interesting anti-*Candida* potential. However, the most prominent candidacidal potential was observed to licorice extract, being achieved the lowest MIC and MFC values. The candidacidal potential of these phenolic extracts was mainly attributed to their high abundance in flavonoids, mainly flavones: luteolin (sage) and apigenin derivatives (licorice), and flavanones: liquiritin derivatives (licorice). In order to deepen the knowledge on the most effective extract, its ability to inhibit biofilm formation was evaluated. Overall, a double concentration of MFC value was necessary to achieve similar results in biofilms. Flow cytometry assays were also carried out, and the obtained results revealed that primary lesion of cellular membrane appear to be most relevant mode of action. Thus, plant derived phenolic compounds evidence a promising potential to combat *Candida* species biofilms, both individually or combined with conventional therapy.